DOCUMENT RESUME

ED 122 796 IR 003 413

AUTHOR Kent, Allen
TITLE Information Interdependence.
PUB DATE May 76
NOTE 12p.; Paper presented at the National Information Retrieval Collogium (Philadelphia, Pennsylvania, May 4-6, 1976)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage
DESCRIPTORS Cataloging; *Information Needs; Information Systems; Interlibrary Loans; Library Circulation; *Library Collections; *Library Cooperation; *Library Networks; Library Planning; Library Research; Library Services; Models; National Programs; Regional Programs; Resource Allocations; Simulation; Speeches; *Use Studies
IDENTIFIERS Pennsylvania; University of Pittsburgh

ABSTRACT

Information Interdependence is an empty concept unless the real user is a dominant element. The individual user of information must be sensitized to the existence of information interdependencies and to the critical need to foster much more of it, if libraries are to survive economically and provide exemplary information service. Three approaches to library collection building attempt to deal with the obvious inability to buy it all: (1) to predict needs through measures of use; (2) to develop resource sharing mechanisms with other institutions in a region; and (3) to develop the bibliographic apparatus to permit locating material regardless of where it resides. Five developing national activities are leading toward the latter ability: (1) national bibliographic control; (2) a national serials data base; (3) a national lending library for journals; (4) machine-readable cataloging for book form materials; and (5) the Ohio College Library Center. To aid in organizing a regional network, a computer simulation has been developed by six libraries in Western Pennsylvania to model acquisitions decisions and processes, technical processing, circulation, and public services for participating libraries. Analysis of circulation records of the University of Pittsburgh conducted as part of an effort to predict collection needs indicates that only half of the collection circulates at all. Further analysis will investigate the relationship between circulation and in-house usage. (Author/PF)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED122796

NIRC Conference - Philadelphia - May 5, 1976

INFORMATION INTERDEPENDENCE

by Allen Kent
University of Pittsburgh

Dr. King, in his work on statistical indicators, is developing a "macro" view of information interdependence which will be useful, even critical, for planning purposes. His clearly stated theme is the support of "better and more economical service." His work is helping to flesh out the picture of the interdependence among authors (research and information generation), publishers (distributors), libraries (physical access), and users (assimilation), cycling back to further research and information generation. The considerations have been to develop statistical indicators which are to be analyzed and interpreted by planners and policy makers.

I should like to take a "micro" view, in my remarks, by examining some of the infrastructure of the same topic, from the point of view of the individual in a single institution, and the interdependencies that exist among those who attempt to serve that individual, attempting to push--and push hard--for "better and more economical service."

A distinguished professor recently described the way in which he does scholarly work in the library. His tools are a "stub" of a pencil and some ragged slips of paper, sometimes torn from envelopes. He goes to the card catalog, reviews a section of 3x5 catalog cards. After he has located several items of possible interest, he scribbles the call numbers on a slip of paper with the stub of pencil, leaving the stub to mark his place while he goes to the stacks to locate the books he has noted. Then he returns to the catalog, starting the process again at the location where he left the pencil stub. When he has enough material to read, he leaves the catalog for that day--taking with him his pencil stub for his next attack on the library resources.

IR003413

This professor considers himself independent, except that he doesn't consciously acknowledge his need for the cooperation of the catalogers to do a good job of describing the books of possible interest. Similarly for the cooperation of the head of acquisitions to provide enough materials in his area of interest. He also needs the cooperation of the Director of Libraries to battle for enough money for materials; and of top administration to favor the library as the highest priority in academia (but only after higher salaries, lower tuition, more money for travel, new programs, etc.).

Of course, the top administration, in turn, must seek funds from students, "angels," and legislators to favor the institution sufficiently to permit the library to be stocked at a level that permits having available just what the professor wants and just when he wants it.

This professor, as I have already said, considers himself independent, despite all the interdependencies I have just described. Said another way, the only interdependency he countenances is--he says "I want"--and it should be provided.

In an attempt to generalize about users/patrons of libraries, I will suggest the questions in their minds:

1. How should I determine what I want/need
   -- with a problem or interest in mind?
2. How do I locate what I decide I want/need?
3. How do I get hands on the specific material I have located?
4. How can this be accomplished
   - quickly
   - without changing habits
   - at no cost to user?

Theoretically, all this can be accomplished with reasonable cost-effectiveness if wants/needs could be predicted (and materials to support these would be purchased). If needs/wants cannot be predicted, then the approach would have to be to "buy it all," so that whatever is desired is available (and in multiple copies, so that a copy is available even if another copy is being used). Since it can't all be bought, materials are frequently purchased indiscriminately--at least it would seem so when no evidence of predicted usefulness is available.

There are three approaches that seem important to develop, given the obvious inability to "buy it all":

(1) To attempt to predict needs through measures of use.

(2) To develop resource sharing mechanisms with other institutions who may have what is not available locally.

(3) To develop the bibliographic apparatus to permit locating material regardless of where it resides.

Each approach can be examined systematically. Let me first consider the last of these. There are five national activities which appear to be vectoring toward the development of national bibliographic control (I am describing these to illustrate the degree of interdependence even when a single individual or institution is to be served):

1. National Bibliographic Control

   Three agencies have been supporting the development of the principles and processes by which bibliographic items are identified at the basic level required for management of and intellectual access to information of all types. These agencies are: National Commission on Libraries and Information Science; Council on Library Resources; and National Science Foundation. The American National Standards Institute has been working on this task through its Standards Committee.

2. Composite National Data Base of Serials

   An authenticated file is being developed which is scheduled to be available to the library community in 1977. The composite data base is being constructed by

the Ohio College Library Center, based initially on the serial files of the Library of Congress, the National Library of Canada, and the University of Minnesota.

The file will be distributed primarily by the Library of Congress and the National Library of Canada. Other initial particpants in the distribution activity are the National Library of Medicine, National Agricultural Library, Boston Theological Institute, Cornell University (for the Five Associated University Libraries--FAUL), Florida Union List of Serials Project, New York State Library, State University of New York, University of California, University of Minnesota, and Yale University.

3. National Lending Library for Journals

Three national organizations are developing a proposal for the establishment of a national lending library for journals in the United States (in 1981). These organizations are the Center for Research Libraries, the Association of Research Libraries, and the National Commission on Libraries and Information Science.

4. Machine-Readable Catalog for Book-Form Materials

The scope of the Library of Congress MARC (Machine-Readable Cataloging) coverage for book-form material is still limited. Accordingly, a number of libraries throughout the country are creating their own machine-readable records, basing many of them on LC cataloging copy. The Council on Library Resources is supporting LC to enable it to accept from authorized participants these locally generated records, remove the duplicates,

compare the records with the official catalog, update them for consistency when required, and redistribute them through the LC Distribution Service. Participants in this project are selected on the basis of completeness of the data content of their records and adherence to MARC encoding. They will receive the certified records at no cost. The project is expected to go far in providing consistency and a degree of standardization to locally created records, making their use by others more feasible.

5. Ohio College Library Center (OCLC)

OCLC currently serves more than 500 libraries in 35 states in the shared cataloging function. Projects have been started to develop serials, interlibrary loan, acquisitions and authority file subsystems. Also an experiment is underway to permit free text searching on words in bibliographic records in varying combinations of search terms, in order to offer member libraries a combination of search methods.

Once bibliographic control is established, it becomes possible to design full service resource sharing networks without each having to carry the impossible burden of the full national bibliographic apparatus. It is possible then to consider primarily the resources and needs of the participating libraries and even to contemplate how local networks can "offload" the national activities.

It is not yet known what the ideal size and characteristics of a regional network should be, but an experiment is being performed in Western Pennsylvania in this regard. The six libraries involved differ radically in terms of staff size, patron population, size of holdings, acquisitions policies and practices, and budgets. But it is a small enough "demonstration" network that, supported by a dedicated mini-computer, it can provide "full service" and be oriented to both users and librarians.

There are still a number of questions to be addressed:

(1) Is it economically feasible?

(2) What effect will it have on the policies, practices, and services of the participating libraries?

(3) What is the optimum size and composition of a network to permit effective sharing of resources?

A computer simulation has been developed which incorporates a model of acquisitions decisions and processes, technical processing, circulation and public service.

The input data is library-specific and creates a profile for each library to alter the parameters of the function submodels to model accurately each library's functions. The output data provides, on a user-selected time interval, the present status and history for each library's actions and the events that occur in the network.

By changing the values of selected variables over a given range, it is then possible to calculate the impact of various usage levels and decision processes on the cost-benefits of the network. This same procedure provides data for determining hardware, software, communications, and data base storage requirement for the network over a range of conditions.

The intent is to remove a great deal of the "art" from the network design.

Now I am ready to consider the question of how to predict needs through measure of use.

The story starts with several hypotheses:

(1) A relatively small percentage of the materials acquired for a research library accounts for most of usage through circulation.

(2) In-house usage correlates very highly with circulation.

NSF provided a grant to investigate these hypotheses. There are two parts to the study, one concerning books and monographs, the other concerning journals.

The opportunity to engage in this study presented itself when we considered that we had available close to 100% of the circulation records of books and monographs in our main library, starting with 1969.

Analysis of five years of circulation data has provided evidence that only half of the collection circulates at all. Even more interesting are the data on frequency of use for each individual item. There was consistent halving of the number of items circulated with each successive increase in number of uses. These results are consistent over each of the five years studied.

We then analyzed the same data in terms of the "aging" of library materials in terms of use through circulation. From this analysis it is possible to predict that use becomes negligible five years after acquisition.

But so far the usage data are only with regard to circulation. We must still determine the correlation between in-house and external usage. Since retrospective data on in-house use are not available, a random sample of 30 full days of usage was developed for the period September 1975 through April 1976. This period is now concluded and we are just starting to analyze the data.

Concurrently, we are examining usage of journals in the field of physics. Data have been gathered on the basis of observations of usage of precise references, sources of alert to the references, and status of patron.

Reduction and analysis of the data are just beginning, as the sample period was concluded at the end of April.

In parallel with these experiments, a conceptual and analytical framework has been developed for studying the economics of libraries.

Perhaps enough has been said to suggest the types of studies which we are pursuing. So I am prepared to return to the theme of this conference on "interdependence."

It is relatively easy to develop the concepts of interdependence and, although technologically taxing, to put them into operation.

But interdependence is an empty concept unless the real user is a dominant element. So I return to the professor with the stub of pencil in a catalog drawer. How to get him into the act -- both in mood and in action?

This is not a trivial task! Let me develop the scenario to suggest why this is so important and difficult.

Last year, our university initiated a contingency budget planning exercise which required each major budget unit to develop a plan for how it would react to successive budget reductions over a five-year period. The intent was to assess impact, and lead to the development of priorities which would then be argued at the annual review of budget submissions.

In the Library, given a locked-in situation for salaries, and multiple branch libraries on campus, the only way possible to react was to consider reducing the acquisitions budget. But since that would also be unacceptable to faculty--as well as the librarians--the reduction was shown in terms of increasing reliance on "interdependence" -- using resource sharing mechanisms. This was shown in terms of shifts in library staff attention to resource sharing activities to attempt to overcome the effects of reduced acquisitions.

The reaction by faculty to resource sharing was severe, in that many interpreted contingency planning as a fait accompli. The reaction can be analyzed in terms of a classic dialectic--as it developed in a confrontation on campus:

Thesis	Antithesis
1. Increased emphasis on library resource sharing is inevitable, given continuing inflation, increasing rate of publication, and stable (or decreasing) budgets.	1. The library should enjoy a larger share of the University budget to support local collections development, lest scholarly pursuits and independent study be inhibited.

2. Given <u>any</u> budget level, the goal of self-sufficiency is no longer feasible.	2. Self-sufficiency was never the goal, rather the goal was selective acquisitions in a relatively autonomous mode of operation.
3. To support the development of research collections, even selective acquisitions can result in local holdings, much of which may never have been used and are unlikely to be used in the future.	3. Past use is not an adequate guide to future needs: there might even be justification for the availability of specialized collections that are used only once in a hundred years.
4. User requests (often ephemeral) must be evaluated on <u>some</u> basis, either by predicting use or by other criteria which would consider the quality of the demand.	4. User demand should be the primary criterion for establishing acquisitions policy. Many of our problems result from the supply systems in libraries having been divorced from users and user-programs in the University.
5. Resource sharing arrangements will permit adequate access to lesser-used materials.	5. If all libraries turn to resource sharing, none will have books to lend.
6. The concept of mutual benefits is essential to the success of any resource sharing activity. An extensive form of coalition decision-making for collections development must be adopted.	6. If resource sharing proves unworkable, the library will be even further behind.
7. The resource sharing activities organized in at least one field, Medicine (by the National Library of Medicine) are operational and successful; they pervade the health science library activity in dealing with several library systems; acquisition, cataloging, reference and availability.	7. The major defects with resource sharing proposals are that the technology and organizational structures are not presently available to provide a level of service comparable to that available today with existing methods.

8. Resource sharing addresses the difficult problem of predicting which materials will be needed for future research. Attempting to solve this problem alone leads to considerable expenditures for materials to increase the probability that desired items will be available in the local collection.

8. The cost of obtaining access to materials may sometimes equal or exceed the cost of purchasing the same materials for the local collection.

9. Resource sharing is being presented as a methodology to provide access to an increased volume of material while utilizing a stationary (or decreasing) acquisition budget.

9. Resource sharing is being touted as a way of reducing costs. Yet there is no way that resource sharing can reduce costs.

10. Some faculty requests lead to support of esoteric interests without regard to a balance among competing programmatic demands and overall University priorities. The esoteric needs can be addressed in a less costly way in a resource sharing context.

10. Most faculty can predict future needs better than some librarians.

11. Local needs for most of the important publications will require local purchases, but purchase of many little-used or unused materials will be avoided in resource sharing arrangements. Marginal publication programs, many of which were developed promiscuously by publishers during the period of rapid expansion of library budgets, will drop out of existence as they price themselves out of the market, with little negative effect on scholarship.

11. Resource sharing will affect the economics of publishing by increasing unit pricing as library orders decline. A substantial part of the prospective savings from resource sharing will evaporate.

12. The plans of national resource sharing systems are based on the philosophy of absorbing the demand that would otherwise lead to excessive borrowing from individual libraries and increased fees for loans from other sources.

12. The local university research library may become more and more a lender (rather than a borrower) of material, causing resource sharing to be a drain rather than a source of additional materials.

I have gone through this dialectic to make a point--that we have a very long way to go in sensitizing the individual user of information to the existence of information interdependencies and to the critical need to foster much more of it, if we are to survive economically, and provide exemplary information service as the fiscal belt tightens more and more.

There is obviously still much to be done in achieving the benefits of information interdependence -- both from a technical point of view and from a behavioral/motivational point of view. It will be interesting to observe whether the pencil stub or technology will dominate -- as the systems develop further.